State of California
Department of Food and Agriculture
Division of Measurement Standards

Certificate Number: 5013-00

California Type Evaluation Program

Certificate of Approval

for Cryogenic Measuring

For:

Electronic Cryogenic Measuring System
Models: SWM 10-15-3810-00 (Meter)
FLOWCOM S8 (Indicator)
Generic Name: ORCA System
Maximum Total Volume: 99 999 999
Maximum Totalizer Volume: 99 999 999

Submitted by:

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Standard Features and Options

Models: SWM 10-15-3810-00 meter, FLOWCOM S8 indicator, Siemens Sitrans P differential pressure transmitter

X	X	X	X
Pipe size	Restriction diameter (mm)	Alpha factor	Flow rates gals/min or standard cubic feet/min
10 = 1"	15	3810	Flow rates listed on ID badge for cryogenic products used with this system

LED indicator Model FLOWCOM S8
Category 2 method of sealing (see Sealing on Page 2)
Siemens Sitrans P differential pressure transmitter Model 7MF4420-1FA-20-1A01-Z
Electronic temperature compensation
Epson ticket printer Model TM-295

This device was evaluated under the California Type Evaluation Program (CTEP) and was found to comply with the applicable technical requirements of California Code of Regulations for "Weighing and Measuring Devices." Evaluation results and device characteristics necessary for inspection and use in commerce are on the following pages.

Effective Date: February 3, 2000

Barbara J. Bloch, Director

MVE, Inc.
Electronic Cryogenic Measuring System
Models: SWM 10-15-3810-00 (Meter) and FLOWCOM S8 (Indicator)

Application: For use as a vehicle mounted cryogenic measuring system.

Identification: The indicator ID plate is located on the side of the indicator housing. The meter ID is stamped on the meter inside the sump which is not accessible. The differential pressure transmitter ID plate is on the side of the transmitter housing located behind the pressure gauge panel. The system information ID badge is located on the inside of the door panel enclosure.

Sealing: The indicator incorporates a Category 2 (physical seal and two event counters) method of sealing. The differential pressure transmitter cover also has provisions for a wire security seal. The meter section (measuring element) has no sealable parameters and does not require a security seal.

Viewing and printing event counters and other parameters:

1. With the power off - Press and hold the Stop button
2. Power up the system - Continue to hold the Stop button.
3. The status window will display 1-0 (flashing) - Release the Stop button.
4. 1-0 indicates print parameter function - Insert paper into printer.
5. Press Start to initiate printing.
6. Press Stop to toggle to the next output - 1-1 indicates print event counter information.
7. Insert paper and press Start to initiate the printing.
8. To view the totalizer, event counters and flow rate limits - press the Stop button to move through the outputs.
9. Toggle to 9-0 (pressing the Stop button) - Exit by pressing the Start button (with 9-0 displayed).

Operation: As product flows through an orifice, the temperature and differential pressure are measured, and a calculation based on information received by the central processing unit displays a quantity on the indicator. "Duplicate Ticket" is printed on all non-original tickets for the same delivery.

Test Conditions: The ORCA System was submitted for evaluation. The emphasis of the evaluation was on design, performance, accuracy, repeatability, and compatibility. The system was installed on a truck and 25 dynamic tests were performed at five different flow rates. The same tests were performed 60 days later. The indicated cubic foot volume was converted to weight and then compared to the scale weight. A manual valve was installed at the hose end and the receiving tanks fitted with a double back check valve (required for safety) to assure partial deliveries were accurate. Forty-five (45) static tests were performed by filling tanks on a scale. After an initial test 9 200 000 standard cubic feet were delivered through the meter over a 12 month period. The meter was retested and was found to be within acceptance tolerance.

The results of the evaluation indicate the system complies with applicable requirements.

Type Evaluation Criteria Used: Title 4, California Code of Regulations, 2000 Edition.

Tested By: Dan Reiswig (CA)